

CLAIMS

1. Method for providing a communication device (9) with radio software from a software download server (1) via a wireless network (19) including a number of access networks (5, 7), said communication device (9) being arranged to operate in said wireless network (19) and comprising a transceiver (11) for receiving said radio software and storing means (13) comprising at least two radio access technologies (15, 17) for communication with corresponding access networks (5, 7) of said wireless network (19), comprising the steps of:
 - initiating (21; 31) a download of radio software of a first radio access technology (15, 17) of said communication device (9);
 - selecting (22, 24; 32, 34, 35) a radio access technology (15, 17) of said communication device (9) for downloading said software;
 - downloading (23, 26; 33, 36, 37) said radio software via the available radio access technology (15, 17), wherein the radio software designed for the first radio access technology (15, 17) is stored in a memory space of said storing means (13).
2. Method according to claim 1, wherein the step of selecting comprising the step of
 - selecting (22; 32) a second radio access technology (15, 17) for downloading of said radio software that not is subject of receiving the software.
3. Method according to claim 2, wherein the step of selecting a radio access technology (15, 17) comprising the step of
 - if said second radio access technology (15, 17) is not available for downloading, selecting (24; 34) said first radio access technology (15, 17) for said downloading.
4. Method according to claim 3, wherein said storing means (13) comprises a memory space for temporary storage, wherein the step of selecting comprising the step of
 - if said first radio access technology (15, 17) is in use, downloading

(37) via said first radio access technology (15, 17) if said memory space (13) for temporary storage is available for receiving said radio software.

- 5 5. Method according to any one claims 1-3, wherein the radio software designed for the first radio access technology (15, 17) is stored in a memory space (13) allocated for said first radio access technology (15, 17).
- 10 6. Method according to any one of the preceding claims, further comprising the step of, at completion of the downloading of the radio software of the first radio access technology (15, 17), verifying (40) that the downloaded software is operational.
- 15 7. Method according to claim 6, wherein the step of verifying comprises the step of performing (41) a local test procedure in said communication device (9).
- 20 8. Method according to claim 7, wherein the step of performing a test procedure comprises the steps of performing a cyclic redundancy check of the downloaded software; performing a built-in self-test of the software configured hardware logic of the communication device (9); and performing a loop-test of the downloaded software.
- 25 9. Method according to claim 6, 7 or 8, wherein the step of verifying comprises the step of if said local test procedure was successful, performing (43, 44, 46, 50, 51, 53) a confirming procedure.
- 30 10. Method according to claim 9, wherein the step of verifying comprises the step of if said local test procedure not was successful, performing (42) an error handling procedure.
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11. Method according to claim 9, wherein the step of performing a confirming procedure comprises the steps of:

sending (43) a test message via said first radio technology to said server (1);

5 if a confirmation message has been received via said first radio technology within a predetermined period of time, determining (44) that the downloading of software was successful; and

10 if a confirmation message not has been received via said first radio technology within a predetermined period of time, performing (45) an error handling procedure.

12. Method according to claim 10 or 11; wherein the step of performing an error handling procedure comprises the steps of claims 1-5.

15 13. Method according to any one of the preceding claims, wherein the step of initiating a download of radio software comprises the steps of:

polling (62) said communication device (9) about the current version of software of a radio access technology (15, 17) of said communication device (9);

20 checking (67) whether said version of software is up to date with the current version of corresponding software available on said server (1); and

if said version of software is not up to date, starting (68) a download procedure according to any one of preceding claims.

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14. Method according to any one of preceding claims 1-13, wherein said communication device (9) comprises initiating means (16) for initiating a download of radio software of a radio access technology (15, 17), and wherein the step of initiating a download of radio software comprises the steps of:

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sending (81) an indication message comprising information regarding the current version of software of a radio access technology (15, 17) of said communication device (9) from said communication device (9) to said server (1) via said wireless network (19);

checking (85) whether said version of software is up to date with the current version of corresponding software available on said server (1);
and

5 if said current version of software is not up to date, starting (86) a download procedure according to any one of preceding claims 1-12.

15. Method according to any one of preceding claims 1-12, wherein the step of initiating a download of radio software comprises the steps of:

10 at connection of said communication device (9) to an access network, sending (92) an inquiry message from said access network to said server (1) via said network in order to check whether a new version of the software of the radio access technology (15, 17) of said communication device (9) corresponding to said access network is available;

15 checking (96) whether said version of software is up to date with the current version of corresponding software available on said server (1);
and

if said current version of software is not up to date, starting (97) a download procedure according to any one of preceding claims 1-12.

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16. A communication device arranged to operate in a wireless network (19) including a number of access networks (5, 7), comprising a transceiver (11) for receiving radio software from a software download server (1) via said wireless network (19); storing means (13) comprising at least two radio access technologies for communication with corresponding radio access networks (5, 7) of said wireless network (19) comprising:

25 controlling means (18) for controlling the operation of said transceiver (11) and said storing means (13) and arranged to select a radio access technology (15, 17) for downloading of radio software for a first radio access technology (15, 17) of said communication device (9);
30 and

wherein said radio software of the first radio access technology (15, 17) is downloaded via the selected radio access technology (15, 17) and stored in a memory space of said storing means (13).

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17. Device according to claim 16, wherein said controlling means (18) is arranged to select a second radio access technology (15, 17) for downloading of said radio software that not is subject of receiving of the software.

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18. Device according to claim 17, wherein said controlling means (18) is arranged to, if said second radio access technology (15, 17) is not available for downloading, select said first radio access technology (15, 17) for said downloading

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19. Device according to claim 18, wherein said storing means (13) comprises a memory space (13) for temporary storage and wherein said controlling means (18) is arranged to, if said first radio access technology (15, 17) is in use, select said first radio access technology (15, 17) for downloading if said memory space (13) for temporary storage is available for receiving said radio software

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20. Device according to any one of claims 16-18, wherein the radio software designed for the first radio access technology (15, 17) is stored in a memory space (13) allocated for said first radio access technology (15, 17).

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21. Device according to any one of claims 16-20, wherein said controlling means (18) is arranged to , at completion of the downloading of the radio software of the first radio access technology (15, 17), verify that the downloaded software is operational.

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22. Device according to claim 21, wherein said controlling means (18) is arranged to perform a local test procedure.

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23. Device according to claim 22, wherein said controlling means (18) is arranged to perform a cyclic redundancy check of the downloaded software; a built-in self-test of the hardware logic of the communication device (9); and a loop-test of the downloaded software.

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24. Device according to claim 21, 22 or 23, wherein said controlling means (18) is arranged to, if said local test procedure was successful, perform a confirming procedure.
- 5 25. Device according to claim 21, 22, or 23, wherein said controlling means (18) is arranged to, if said local test procedure not was successful, perform an error handling procedure.
- 10 26. Device according to claim 24, wherein said controlling means (18) is arranged to send a test message via said first radio technology to said server (1); if a confirmation message has been received via said first radio technology within a predetermined period of time, determine that the downloading of software was successful; and if a confirmation message not has been received via said first radio technology within a
15 predetermined period of time, perform an error handling procedure.
- 20 27. Device according to claim 25 or 26, wherein said controlling means (18) is arranged to performing an error handling procedure comprising the steps of claims 1-5
- 25 28. Device according to any one of preceding claims, further comprising initiating means (16) for initiating a download of radio software of a radio access technology (15, 17) of said communication device (9) and wherein said controlling means (18) is arranged to control the operation of said initiating means (16).
- 30 29. A system in a wireless network (19) including a number of access networks (5, 7), comprising a software download server (1) connected to said wireless network (19) and at least one communication device (9) according to any one of claims 16-28.
30. Computer readable medium comprising instructions for bringing a programmable device to perform the method according to any one of claims 1-15.